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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/746,459 | 12/26/2000 | Eung-Youl Kang | P66216US0 | 2398 |

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JACOBSON, PRICE, HOLMAN & STERN
PROFESSIONAL LIMITED LIABILITY COMPANY
400 Seventh Street, N.W.
Suite 600
Washington, DC 20004

EXAMINER

FARAHANI, DANA

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 05/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/746,459

Applicant(s)

KANG, EUNG-YOUL

Examiner

Dana Farahani

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: on page 6, line 4, the word "is" is misspelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh (U.S. 5023694) in view of Hayt (Engineering Electromagnetics).

Regarding claim 1, Yeh discloses, figure 3, a memory cell comprising a first active area incorporating therein a gate of a depletion mode transistor 44; a second active area adjacent to the first active area and incorporating therein a gate of an enhancement mode transistor 38; a word line, shown as VWL and VFG, coupled to the gate of the depletion mode transistor 44 and the gate of the enhancement mode transistor 38; a capacitor Cs coupled to a drain of the enhancement mode transistor 38. Although Yeh does not disclose the capacitor being ferroelectric, it is well known in the art that a polarization produced by a given electric field intensity in a ferroelectric material, depends on the past history of the material (see, for example, Hayt, page 136,

the paragraph above the formula 26). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a ferroelectric material in Yeh's structure, so the history of the polarity of the material remains in the structure.

Regarding claims 4, Yeh discloses the first and the second active areas are n-types (see column 16, line 40).

4. Claims 2, 3, 5-8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeh in view of Hayt, as applied to claim 1 above, and further in view of Hoffman (U.S. 4486859).

Regarding claims 2, 5, 6, and 8, Yeh does not disclose the first active area of the memory cell is coupled to first active areas of neighboring memory cells. Hoffman discloses, figure 1, the first active area C2 of memory cell 10 is coupled to first active areas of neighboring memory cells (only one of them shown in the figure, below memory cell 10). Therefore, it would have obvious to one of ordinary skill in the art at the time of the invention to include this limitation in Yeh's structure in order to form an array of memory cells.

Regarding claims 3 and 7, Hoffman, as applied to Yeh in view of Hayt, discloses, figure 1, the bit line CR2 is parallel with capacitor C3, so the capacitor is able to store logic states 1 and 0.

Regarding claim 9, Hoffman, as applied to Yeh in view of Hayt, discloses, column 4, line 67, a sense amplifier in order to sense the data in the bit line.

Response to Arguments

The Office acknowledges the correction to the specification.

Applicant's arguments filed on 4/29/02 are fully considered but they are not persuasive.

The applicant argues that "Yeh and Hayt, as combined, fail to disclose or suggest a word line coupled to a gate of the depletion mode transistor and a gate of the enhancement mode transistor of claim 1". The Office acknowledges that the Yeh reference discloses in figure 3, V_{WL} is connected to the gates 38 and 44 (see column 11 and 12, equations 1 and 2, where V_{WL} could be equal to V_{FG}); and V_{WL} is a control potential, or a word line (column 11, the last line).

Furthermore, the applicant argues that Yeh fails to disclose adjacent first and second active areas incorporating therein a gate of an enhancement mode transistor. The Office acknowledges that the Yeh discloses in figure 4 the area 16 used as common drain for both the transistors. The active area 16 comprises two adjacent active areas.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not


mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (703)305-1914. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703)306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Dana Farahani
May 15, 2002


OLIK CHAUDHURI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800